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CORRESPONDENCE MEMORANDUM

DATE: February 15, 2011
TO: Wisconsin Deferred Compensation Board
FROM: Shelly Schueller, Director
Wisconsin Deferred Compensation Program
SUBJECT: Dimensional Fund Advisors (DFA) U.S. Micro Cap Fund Benchmarks

The Investment Committee and staff recommend that the Board discontinue using the DFA U.S. Micro Cap Fund custom benchmark created by Advised Assets Group (AAG) and the Morningstar U.S. Small Blend benchmark and instead use only the Russell 2000 TR USD and the Russell Micro Cap TR USD for comparison.

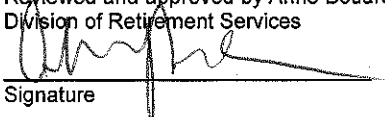
The Investment Committee reviewed the Morningstar U.S. Small Blend benchmark in December 2010 with AAG and Department staff. The market capitalization of the Morningstar U.S. Small Blend benchmark is significantly higher than that of the DFA U.S. Micro Cap Fund. Consequently, the Investment Committee concurred with AAG's recommendation to remove it as a benchmark.

The attached memo from John Gamble of AAG outlines the primary reasons why using a custom benchmark to evaluate the performance of the DFA US Micro Cap Fund is not advisable. In summary, the reasons are as follows:

- There are not enough funds of the right size, characteristics and composition to create a valid sample to which comparisons to the DFA US Micro Cap Fund can comfortably be made on an on-going basis;
- The two existing indices (Russell 2000 TR USD and the Russell Micro Cap TR USD) are solidly correlated to the DFA US Micro Cap Fund and already provide very useful measurement benchmarks.

The Investment Committee discussed the custom benchmark recommendation with Mr. Gamble at its meeting on February 10, 2011, and concurred with his recommendations. Staff will be available to discuss these recommendations with you at the Board meeting on March 1, 2011.

Attachment: January 17, 2011, AAG memo on DFA benchmarks

Reviewed and approved by Anne Boudreau, Deputy Division Administrator, Division of Retirement Services	
	02-16-2011
Signature	Date

Board	Mtg Date	Item #
DC	03.01.11	9



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Date: January 17, 2011

To: Shelly Schueller, Director
Wisconsin Deferred Compensation (WDC) Program

Subject: Dimensional Fund Advisors (DFA) US Micro Cap Fund Benchmarks

I recommend not pursuing the development and implementation of a custom index for the Dimensional Fund Advisors (DFA) US Micro Cap Fund. I also recommend utilizing the two existing indexes selected for the fund: the Russell 2000 TR USD and the Russell Micro Cap TR USD.

Developing a custom index for a fund or other investment strategy can be accomplished if essential qualities and processes are present.

Essential Properties of an Investment Benchmark

In order to determine the success of an investment strategy it must be compared to a valid benchmark. A valid benchmark should possess a variety of qualities. A few key benchmark qualities related to constructing a custom benchmark (index):

1. Unambiguous – the identities and weights of the securities or factor exposures should be clearly defined.
2. Appropriate – the benchmark should reflect the manager's style or expertise
3. Specified in advance – the benchmark and its constituents are specified before and investment evaluation period begins.

Summary of the Core Requirements and Processes of Creating a Custom index

1. Various studies have shown a sample size of at least thirty constituents (funds, bonds, etc.) are needed to create a custom index which is statistical relevant and mathematical rigorous. A common industry practice is to use a minimum constituent sample size of thirty. A sample size smaller greatly degrades the value of a custom index.

2. The constituent characteristics of a custom index need to closely match the base investment strategy characteristics in terms of: the style, asset allocation blend and weights, ratings distribution, market cap size, concentration of the portfolio, percentage weights of sectors, currency exposure weights, etc. In essence the characteristics of each of the constituents of a custom index should closely match the characteristics of the base investment strategy such as a fund.
3. Through time the characteristics of the constituents of a custom index and the characteristics of the investment strategy may change. Thus the constituent and investment strategy characteristics become out of sync. This very real possibility requires ongoing analysis of the characteristics of each index constituent relative to the investment strategy. The analysis requires the calculation of this Index Drift which needs to be addressed. Such analysis is needed if the desire is to quantify the resulting performance difference due to index drift. The analysis process is complex and may include the decision to adjust the custom index.
4. Survivorship bias – Through time funds do exit the business, or merge with other funds and change their investment characteristics. The impact results in another potential impact to a custom index which must be addressed or the usefulness of the custom index is degraded.

Review of DFA Market Cap Index Custom Index Analysis

The initial analysis completed by the Advised Asset Group, LLC to create a custom index for the Dimensional Fund Advisors (DFA) US Micro Cap Fund grew from the desire to create an index with an average market cap size in-line with the fund. The core intent of the analysis effort was to create an index which aligned well with the fund. The analysis was a solid step in the direction of attempting to create a custom index. Unfortunately the custom index proposed does not fully address the core four requirements and processes needed to create a custom index addressed in the prior section of this memo. In particular requirements #1 and #2 are not met. The constituent size used was nineteen, and even more importantly only a few of the nineteen constituent funds have characteristics similar to the fund.

A further hurdle in creating a custom index for the fund is the number of valid constituent funds available in the market place to create a custom index. I completed an analysis of all US denominated funds using a Morningstar Analysis tool AAG utilizes and I was only able to identify ten funds with a constituent profile fairly close to that of Dimensional Fund Advisors (DFA) US Micro Cap fund. Thus the available sample size is way too small to create a useful custom index and opens the door to many potential problems.

Also, the complexities of creating and dealing with ongoing index drift are cumbersome for any custom index in terms of capturing and analyzing performance differences between a custom index and the base investment strategy (fund) through time.

The Identification of useful Market Indexes for the Dimensional Fund Advisors (DFA) US Micro Cap Fund

To date the WDC has two indexes established for the Dimensional Fund Advisors (DFA) US Micro Cap fund. The Russell 2000 TR USD and the Russell Micro Cap TR USD. As indicated at the inception of this memo I am recommending utilizing these indexes for the fund.

I completed an index regression analysis over three years and five years through 12/31/2010. The analysis entailed comparing the Dimensional Fund Advisors (DFA) US Micro Cap fund to the entire US denominated universe of indexes (26,339 indexes) using the Morningstar analysis tool AAG utilizes. The analysis focused on identifying the top two Total Return US denominated indexes with the highest R-squared to the fund. R-squared reflects the strength of a relationship between two series of data. The value varies between 0 and 100%. 100% equates to a funds market movement perfectly matching the index.

The results:

<u>Index</u>	<u>3-Years</u>	<u>5-Years</u>
Russell Micro Cap TR USD	98.96%	99.04%
Russell 2000 TR USD	98.80%	99.12%

The analysis indicates the fund has a solid relationship to both indexes through time. Also, the vast majority of investment firms utilize these two indexes for Micro Cap and Small Cap funds. Thus the two indexes are useful benchmarks to measure how well the Dimensional Fund Advisors (DFA) US Micro Cap fund performs. The utilization of the two indexes is not only a statistically significant approach as seen over the 3-year and 5-year time periods, but also steps away from dealing with the complexities and many potential issues with the creation of a custom index. The creation of a custom index for the fund is simply not warranted given the small constituent size available and the various complex performance analysis issues which will likely arise due to index drift.

Summary of Rationale for Recommendations

- 1. I recommend not pursuing the creation of a custom index for the fund. This recommendation centers on the unavailability of an appropriate sample size of funds to utilize, the many complexities in analyzing the performance of the constituents of a custom index relative to the base fund investment strategy through time, and the availability of solid market indexes which greatly simplify performance analysis.**
- 2. I recommend utilizing the two existing indexes for the Dimensional Fund Advisors (DFA) US Micro Cap Fund: the Russell 2000 TR USD and the Russell Micro Cap TR USD. This recommendation is based on the statistical relevance of the indexes to the fund through time, industry standard practice use of the indexes for Micro Cap funds, ease of computation and analysis, and the diverse nature of the indexes.**